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MANAGERIAL CONTROL OF THE ARMY'S INTEGRATED SUSTAINMENT MAINTENANCE SYSTEM FROM A NATIONAL PERSPECTIVE

by

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This thesis examines the Army's Integrated Sustainment Maintenance (ISM) program. As with any program, there is a certain amount of managerial control necessary to implement and execute the program. The primary focus of this thesis is to identify what agencies, within the Army, are capable of providing the centralized management of ISM at the national level and what functions/responsibilities the National Sustainment Maintenance Manager (NSMM) should perform.

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MANAGERIAL CONTROL OF THE ARMY'S INTEGRATED SUSTAINMENT MAINTENANCE SYSTEM FROM A NATIONAL PERSPECTIVE

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This thesis examines the Army's Integrated Sustainment Maintenance (ISM) program. As with any program, there is a certain amount of managerial control necessary to implement and execute the program. The primary focus of this thesis is to identify what agencies, within the Army, are capable of providing the centralized management of ISM at the national level and what functions/responsibilities the National Sustainment Maintenance Manager (NSMM) should perform.

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I. INTRODUCTION

A. AREA OF RESEARCH

This thesis will examine the United States Army's Integrated Sustainment Maintenance (ISM) program. As with any program, there is a certain amount of managerial control necessary to implement and execute the program. The primary focus of this thesis is to determine what agency, within the Army, should provide the centralized management of ISM at the national level and what are this agency's functions and responsibilities.

B. BACKGROUND

The Army's maintenance system, for the most part, consists of four separate levels (See Table 1-1). Each level serves a specific purpose within the overall system. The only deviations from the four-level maintenance system are found in the aviation maintenance community and for certain low density, high-tech items.

Levels of Maintenance	Primary Responsibility
Organizational	- Preventive maintenance, checks, and services - Minor adjustments - Replacement of piece parts
Direct Support (DS)	- Diagnose and isolate equipment, component, and assemblies malfunctions - Repair defective end items
General Support (GS)	- Diagnose and isolate equipment, component, and assemblies malfunctions to the internal piece part level - Repair/modification of end items, component, and assemblies to the internal piece part level
Depot	- Overhaul of end items, components, and assemblies requiring manufacturer's tolerances

Table 1-1. Categories of Maintenance [Ref. 1, pp. 2-4 and 2-5]

All maintenance conducted above the DS level is referred to as *sustainment maintenance*. Within the Army, there are a wide variety of units/organizations that perform sustainment maintenance. The following list identifies the common sustainment maintenance providers:

- Active component GS maintenance units.
- Reserve component (both National Guard and Army Reserve) GS maintenance units.
- Non-divisional aviation intermediate maintenance (AVIM) units.
- Installation Directorate of Logistics (DOL) maintenance activities.
- Depots and National-level maintenance management activities operated by the Army Materiel Command (AMC).
- Specialized Repair Activities (SRA). *
- Forward Repair Activities (FRA). *
- Department of the Army contractors. *

* NOTE: These activities perform sustainment maintenance for specialized equipment or under unique conditions. [Ref. 2, p. 1-1]

C. THE EVOLUTION OF ISM

As the Department of Defense continues to face force and budget reductions, the Army must rise to the occasion and explore opportunities that will, subject to resource constraints, improve its level of wartime readiness. Senior Army leadership realized that one area that needed substantial changes was the Army's maintenance procedures. The U. S. Army Strategic Logistics Agency (SLA), a staff support agency of the Office of the Deputy Chief of Staff for Logistics (ODCSLOG), was assigned the mission to develop a

streamlined sustainment maintenance (all maintenance conducted above the Direct Support level) system for the Army. SLA established a task force to develop this futuristic maintenance concept. The task force coordinated with numerous staffs and commands throughout the Army. They also studied current and emerging Army doctrine as well as the lessons-learned from Operation Desert Shield/Storm. Their recommendation was to create the ISM concept.

ISM allows centralized management and decentralized execution of the Army's sustainment maintenance requirements through the consolidation of all sustainment maintenance activities under an integrated management structure. The goal of the concept is to maximize repair capabilities while providing, at a reduced cost, high levels of operational availability for assigned weapon systems. By balancing resource allocations, workload distributions, and decentralizing the execution of sustainment maintenance, ISM seeks to maximize repair capabilities and optimize the use of available resources. The management for the concept will be executed at three levels: local, regional, and national.

Local Sustainment Maintenance Managers (LSMMs) have the responsibility to workload all Army sustainment maintenance activities within their local area (installation). The LSMMs will develop a reparable program consisting of authorized reparable components which satisfy one of the following criteria: (1) the reparable is a locally demanded readiness driver, (2) the reparable is a cost-effective repair, or (3) the reparable provides essential training for sustainment maintenance personnel. Once developed, this information is sent to a regional manager for consolidation with other

local reparable programs. Upon approval, the LSMMs would be responsible for the execution of the local program. Any maintenance requirements beyond the capability of the local activities would be elevated to the region for redistribution.

Regional Sustainment Maintenance Managers (RSMMs), located at designated geographic areas, would have the authority to prioritize and/or redistribute workloads among the LSMMs. The local reparable programs submitted to the RSMMs will be tailored to meet weapon system availability requirements, cost avoidance goals, and regional training requirements. The RSMMs would establish regional reparable programs to support regional requirements not included in any local reparable program. This should enhance the readiness of low-density equipment items which, when consolidated at the regional levels, would justify a reparable program. The RSMMs are responsible for managing any shortcomings in the LSMM's capability/capacity by cross-leveling assets between local areas, reassigning workloads, or passing shortfalls to the national level.

A National Sustainment Maintenance Manager (NSMM) is responsible for integrating all sustainment maintenance for the Army, both in peacetime and in wartime. At the national level, wholesale requirements for reparable items can be determined. With visibility of regional/local reparable programs, the item managers located at National Inventory Control Points (NICPs) can better manage their assigned commodities. The item managers would be able to make intelligent repair/buy decisions. This will enable better utilization of assets, reduce unnecessary procurements of new items, and maximize cost avoidance. [Ref. 2, pp. 1-2 and 1-3]

D. INITIAL TESTING OF THE ISM CONCEPT

Under the control of SLA, an ISM Proof of Principle (PoP) was conducted at several U. S. Army Forces Command (FORSCOM) installations from 1 November 1993 to 31 July 1994. A geographical region for the ISM PoP was established that consisted of the following locations: Fort Carson, Colorado; Fort Riley, Kansas; and Fort Hood, Texas. [Ref. 2, p. 1-3] Each of these installations was already operating separate reparable programs (See Table 1-2 and Figure 1-1). Of the total 695 national stock numbers (NSNs) being repaired within the region, only 67 NSNs were being repaired by all three installations. Of the remaining NSNs, 92 were common to two of the three installations, and 536 were being repaired at a single location. [Ref. 3, pp. 29-30]

Installation	# of Reparables
Fort Carson	177
Fort Hood	405
Fort Riley	339

Table 1-2. Installation Reparable Programs

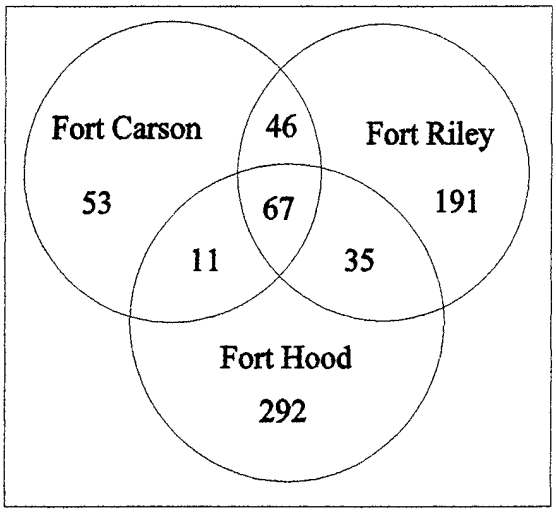

Figure 1-1. NSN Distribution by Installation

The staff of personnel assembled to conduct the management of the PoP came from various organizations and locations. The LSMMs were drawn from the DOL maintenance staffs from the three participating installations. Augmented by contractor personnel, the LSMMs were given the responsibility for managing the sustainment maintenance workload within their local area. An officer from the 4th Corps Material Management Center (CMMC), 13th Corps Support Command (COSCOM), Fort Hood, served as the RSMM. Augmented by contractor personnel, the RSMM prioritized and managed the sustainment maintenance within the region. Personnel from the Depot Systems Command (DESCOM), an AMC major subordinate command, were collocated at the local and regional offices. The DESCOM representatives provided an interface to the national level. SLA operated a command and control cell at Fort Hood to monitor the PoP, resolve problems, and provide guidance. [Ref. 2, p. 1-3]

In order to assist in the management of the sustainment maintenance functions occurring within the region, an automated system had to be employed. SLA selected a commercially-designed, prototype, Executive Management Information System (EMIS) for the task. The system was developed by the Computer Systems Development Corporation. The RSMM and the three LSMMs all had access to the EMIS. The system provided the maintenance managers with information on maintenance forecasting, workload management, exception management, repair cycle times, and other maintenance-related information. The EMIS was capable of uploading data from the Army's current and emerging logistics management and information systems. [Ref. 2, p. 1-4]

Once the critical personnel positions were filled, the managers began to analyze the regional reparable workload. Their initial objective was to make recommendations for reducing inefficiencies and consolidating sustainment maintenance repairs within the region. To accomplish this task, the managers utilized another unique ISM feature - a standardized maintenance costing method. This new methodology allows the full cost (direct labor costs, indirect labor costs, and general and administrative expenses) of sustainment maintenance to be captured regardless of what types of organizations are performing the repairs.

The full-costing methodology provided a framework for comparing the actual repair costs of the reparable candidates to be repaired at regional centers of excellence (COEs) during the PoP. Each COE repaired items for customers on their own installation, plus would receive, repair, and return reparables to other PoP-participating

installations. The RSMM and the LSMMs selected over 130 reparable NSNs as possible candidates for the program.

After utilizing various selection factors, the 130 candidate NSNs were screened down to 65 NSNs for repair at the regional COEs. The initial assignment of NSNs to certain COEs had to be slightly modified to adjust for work center capabilities and capacities. Once approval was received from the commanders of the three installations, the following workloads were assigned: Fort Carson served as the COE for 18 NSNs, Fort Hood was the COE for 34 NSNs, and Fort Riley as the COE for 13 NSNs. [Ref. 3, p. 31]

The cost avoidance that was achieved during the ISM PoP was quite encouraging. For the 65 NSNs selected for the initial test, an annual cost avoidance of $4.4 million was forecasted. Since the PoP was scheduled for only a nine month period rather than a full 12 months, the forecasted savings would be $3.3 million. Using the full-cost methodology, the actual cost avoidance realized during the PoP was $2.3 million. The $1.0 million shortfall between the forecasted cost avoidance and the actual savings was attributed to three factors: (1) the production throughout the region was slow to start, (2) the supply system was not integrated into the ISM concept, and (3) the cost of some of the repair parts utilized in the sustainment maintenance changed during the period. [Ref. 4, pp. 17-18]

In addition to the repairs being conducted on the regional items, SLA asked the U. S. Army Tank and Automotive Command (TACOM) to submit reparable components to the RSMM from the national level. These items do not belong to any specific

installation. They are inventory that supports the wholesale supply system within the Army. Typically, these reparables are overhauled at Army depots, civilian contractors, or replaced by new procurements. Tables 1-3 and 1-4 illustrate TACOM's cost avoidance by participating in the ISM PoP. [Ref. 5]

E. ISM-X DEMONSTRATION

Currently, the Army is conducting a second round of ISM. This phase, which will run from 1 April to 31 December 1995, is called *Integrated Sustainment Maintenance Expanded* (ISM-X). The ISM-X demonstration will utilize the same regional reparable structure that was established with ISM PoP. The RSMM will be based at Fort Hood again; however, there are some additional participants involved with ISM-X. The installations/activities that are participating are listed in Table 1-5. In addition to the increased number of installations involved, the number of reparable NSNs has increased from 65 lines (ISM PoP) to 187 lines (ISM-X). [Ref. 6]

Item Name	End Item	Qty	Repair Site	Total ISM Cost	Depot Cost	Cost Avoidance
Winch	2.5 T truck	55	Riley	$27,883	$137,500	$109,617
Winch	2.5 T truck	200	Hood	93,834	500,000	406,166
Transmsn	HMMWV	47	Riley	30,112	51,606	21,494
Transmsn	HMMWV	213	Riley	133,606	233,874	100,268
Starter	M88A1	162	Riley	33,000	57,222	24,222
Starter	M88A1	66	Riley	14,067	23,313	9,246
Starter	M88A1	1,300	Riley	403,193	539,812	136,619
Engine	HEMTT	75	Hood	495,456	1,312,457	817,001
Engine	HEMTT	145	Hood	958,635	2,537,417	1,578,782
Engine	HEMTT	137	Hood	907,731	2,397,422	1,489,691
Engine	HMMWV	100	Riley	163,500	381,900	218,400
Engine	HMMWV	100	Riley	160,797	381,900	221,103
Engine	CUCV	100	Carson	191,554	475,400	283,846
Radiator	HEMTT	5	Hood	3,344	6,704	3,360
Engine	M939A2	40	Riley	124,532	527,920	403,388
Engine	M9ACE	9	Riley	54,279	192,609	138,330
Transfer	2.5 T truck	55	Hood	83,806	110,718	26,913
Total		*2,809*		*$3,879,329*	*$9,867,774*	*$5,988,445*
Transfer	2.5 T truck	173	Hood	171,215	*	*
Transfer	2.5 T truck	180	Hood	159,005	*	*
Cyl Head	M113	112	Hood	27,450	*	*
Total		*3,274*		*$4,236,999*		

Table 1-3. ISM Cost Avoidance Based On Depot Overhaul Costs

* Depot overhaul costs were not available for these items.

Item Name	End Item	Qty	Repair Site	Total ISM Cost	Replace-ment Price	Cost Avoidance
Winch	2.5 T truck	55	Riley	$27,883	$88,263	$60,381
Winch	2.5 T truck	200	Hood	93,834	320,958	227,124
Transmsn	HMMWV	47	Riley	30,112	79,291	49,179
Transmsn	HMMWV	213	Riley	133,606	359,342	225,735
Starter	M88A1	162	Riley	33,000	76,372	43,372
Starter	M88A1	66	Riley	14,067	31,114	17,048
Starter	M88A1	1,300	Riley	403,193	612,729	209,536
Engine	HEMTT	75	Hood	495,456	1,995,407	1,499,951
Engine	HEMTT	145	Hood	958,635	3,857,787	2,899,152
Engine	HEMTT	137	Hood	907,731	3,644,944	2,737,213
Engine	HMMWV	100	Riley	163,500	418,019	254,519
Engine	HMMWV	100	Riley	160,797	418,019	257,222
Engine	CUCV	100	Carson	191,554	579,983	388,429
Radiator	HEMTT	5	Hood	3,344	5,375	2,031
Engine	M939A2	40	Riley	124,532	565,076	440,544
Engine	M9ACE	9	Riley	54,279	317,280	263,001
Transfer	2.5 T truck	55	Hood	83,806	99,715	15,909
Transfer	2.5 T truck	173	Hood	171,215	313,649	142,434
Transfer	2.5 T truck	180	Hood	159,005	326,340	167,335
Cyl Head	M113	112	Hood	27,450	55,724	28,275
Total		*3,274*		*$4,236,999*	*$14,420,170*	*$10,126,929*

Table 1-4. ISM Cost Avoidance Based On New Procurements

NOTES: Totals have been rounded.
Replacement Price = Cost to procure new assets.

Installation/Organization	Major Army Command (MACOM)
Fort Bliss, Texas	U. S. Army Training and Doctrine Command (TRADOC)
Fort Carson, Colorado	FORSCOM
Fort Hood, Texas	FORSCOM
Fort Riley, Kansas	FORSCOM
Fort Sill, Oklahoma	TRADOC
Kansas National Guard	NGB
Texas National Guard	NGB

Table 1-5. ISM-X Participants

In addition to the Fort Hood-based region covering the central portion of the United States, the Army is developing a second region for the east coast. The eastern region will consist of the following FORSCOM installations: Fort Bragg, North Carolina (also serving as the RSMM's location); Fort Cambell, Kentucky; Fort Drum, New York; Fort Polk, Louisiana; and Fort Stewart, Georgia. By incorporating the lessons-learned for the central region, the eastern region plans to be operational by the first quarter of fiscal year 96. [Ref. 7]

F. CONCLUSION

As illustrated in this chapter, ISM is a revolutionary new method for the Army to perform its sustainment maintenance. Although the concept has not fully matured or has not been totally accepted by the senior Army leadership as to date, the ISM program has already proven itself as a likely approach for future Army maintenance requirements. The following chapter will address the importance of implementing the ISM concept.

II. IMPORTANCE OF ISM

A. INTRODUCTION

As the testing/analysis of the Integrated Sustainment Maintenance (ISM) concept proceeds, additional benefits to the Army continue to be realized. In addition to these apparent advantages to the Army's maintenance system, several other factors indicate that ISM needs to be implemented. The issues that exist in today's Army environment are ones of revolutionary new doctrine/strategies, of a need for improved wartime readiness, and of a reduced budget.

B. DOCTRINE AND STRATEGIES

The innovative doctrine and strategies prevelent in today's military are a by-product of the conclusion of the Cold War.

> In 1991, in response to the rapid, significant changes in both the international and domestic environments, the President published a new National Security Strategy for the United States. Shortly thereafter, the Chairman of the Joint Chiefs of Staff, published the new National Military Strategy. Those two landmark documents, responding fundamentally to the changing threat and dramatic budget reductions, altered the structural and operational paradigms of all DoD components. [Ref. 8, p. 2-1]

1. National Military Strategy

In the 1995 edition of the National Military Strategy, General John M. Shalikashvili explains that "our Armed Forces are engaged worldwide on a continual basis to accomplish two national military objectives - promoting stability (through regional cooperation and constructive interaction) and thwarting aggression (through credible deterrence and robust warfighting capabilities)." In order to accomplish these

two objectives, he identifies a strategy consisting of three tasks that our military forces must perform. The tasks are:

- Peacetime engagement.
- Deterrence and conflict prevention.
- Fighting and winning our Nation's wars.

Furthermore, achieving these "tasks of the strategy is facilitated by the two complementary strategic concepts of *overseas presence* and *power projection.*" [Ref. 9, p. i]

Overseas presence includes "both permanently stationed forces and temporarily deployed forces abroad." This presence, which includes "routine air, ground, naval deployments, various contingency operations, and global prepositioning of equipment," helps maintain crucial infrastructure available and prepared for times of conflict. [Ref. 9, p. ii]

With less military power stationed overseas than in the past, the U. S. must increase our ability to project power abroad. General Shalikashvili states that, "credible power projection capability complements our overseas presence in acting as a deterrent to potential adversaries." These capabilities also give us greater flexibility in engaging military forces. [Ref. 9, p. 7]

2. Operations

In 1993, the United States Army drastically changed its operational doctrine (Field Manual 100-5) from the *AirLand Battle* concept to what is now called *Operations.*

This new doctrine, which is based on the National Security Strategy and the National Military Strategy from the President and the Chairman of the Joint Chiefs of Staff, is designed to carry the Army into the 21st century. The primary differences between the two doctrines are shown in Table 2-1.

AirLand Battle (1976, '82,& '86)	*Operations (1993)*
● Forward - Deployed	● CONUS - Based
● European - Focused	● Globally - Focused
● Prepared for Global War with Soviet Union	● Prepared for Regional Contingencies

Table 2-1. Doctrinal Comparison [Ref. 10]

Field Manual (FM) 100-5 reflects the use of the classical principles of war, the dynamics of combat power, and the organization of today's warfare. Future conflicts, as demonstrated in Operation Desert Shield/Storm (ODS), will be fought from a three-dimensional (width, depth, and height) standpoint with highly technical forces on a nonlinear battlefield. [Ref. 11, p. 9]

3. Changing the Azimuth on Logistics

Due to the doctrinal and strategic transitions that have occurred in the last five years, Army logisticians have responded in a totally new direction. This new azimuth is targeted toward a concept called *Force XXI*. The *Force XXI* doctrine focuses on the enormous strategic mobility, distribution, and sustainment challenges that accompany the evolving operational doctrine and military strategy. The march to *Force XXI* is divided into three phases: near term (1994-1996), mid-term (2002), and long term (2020).

The near term will involve introducing numerous new concepts within the Army's logistical system. The characteristics of *Force XXI* include:

- Battle command based on real-time, shared, simultaneous, situational awareness.
- Digitally linked/networked organizations.
- Modular force structure with the flexibility to be designed for a specific capability rather than a particular threat.
- Seamless logistics.
- Digitization with information-age technology.

During the mid-term phase, the Army plans to introduce several new force structures (Brigade 96, Division 97, and Corps 99) and complete the implementation of the *Power Projection Logistics* initiatives started in the early 1990's. Several of these initiatives include the Army's Strategic Mobility Program (ASMP), afloat prepositioned maintenance facilities, and Total Asset Visibility (TAV). [Ref. 8, p. 2-1]

The final phase will involve introducing *Battlespace Logistics*. The goal of *Battlespace Logistics* is to have a logistics system that is deployable for wartime, yet suitable in peacetime. The primary characteristics of *Battlespace Logistics* are:

- Single logistical system with a national provider for the entire Army.
- Intelligent, value-added, networked system electronically linked and operating in real time.
- Asset visibility throughout the system.

- Fully synchronized and compatible for all Army forces (active and reserve components, as well as for combat arms, combat support, and combat service support units), yet capable of operating under joint/combined environments.
- Cost effective, transparent to the user, and a nonhierarchical structure consisting of multifunctional components. [Ref. 8, p. 3-5]

The Army needs a flexible, responsive maintenance concept to support future operations. ISM is one of several initiatives that senior Army logisticians are studying in preparation for the 21st century as part of *Force XXI*. [Ref. 12, p. 4]

C. WARTIME READINESS

Due to the overwhelming success that the coalition forces experienced in ODS and the lack of a major threat to our security from a hostile nation, many believe that the DoD, and the Army in particular, has little to be concerned about in future conflicts. However, there are numerous factors that show otherwise. Lessons-learned from ODS, problems with the Army's current sustainment maintenance structure, and shortcomings with the existing active component/reserve component (AC/RC) relationship, all serve as warnings to wartime readiness deficiencies.

1. Equipment Readiness

The General Accounting Office (GAO) has raised a concern that the weakest link in the military's logistics chain is the sustainability of deployed systems in an extended conflict. During ODS, the Army increased its estimated operating requirements for repair parts by as much as five times the pre-ODS usage rate. The increase was attributed to the increased operating tempo (optempo), the harsh desert environment in

Southwest Asia (SWA), and a lack of visibility of repair parts once they arrived in the theater. Based on these increased usage rates of critical items, GAO expected the Army's inventory to be exhausted within the first 30 days of conflict. [Ref. 13, p. 4]

The Tank-Automotive Command (TACOM) estimated a threefold increase in the spare parts usage rate over the normal usage rate; the Aviation Systems Command (AVSCOM) projected a fivefold increase. These Commands, in conjunction with commanders in SWA, identified the critical readiness drivers for the Army's ground and air combat systems. Based on the on-hand balance and due-in supply status, these officials estimated what additional stocks would be required for various optempos. Table 2-2 shows the seriousness of the estimated repair parts shortages.

EQUIPMENT	<30 DOS	<60 DOS	<90 DOS
Air (AH-64, CH-47, OH-58, & UH-60)	5 - 30 *	13 - 44 *	15 - 49 *
Ground (M1A1, M60, & M2/3)	64	71	N/A

Table 2-2. Percentage of Critical Items with less than 30/60/90 Days of Supply (DOS)

* Range for Air Equipment is due to various optempos.

In an attempt to overcome the shortages of repair parts for these critical systems, the Commands pursued several logistical initiatives. Some of these actions included:

- Expanding existing repair programs.
- Establishing new repair programs.
- Expediting contract awards.
- Accelerating deliveries of existing contracts.

In some cases, these initiatives helped improve the readiness of these systems. In other instances, these actions did not improve the inventory situation until after the on-hand balances were exhausted. For example,

> On January 26, 1991, the Tank-Automotive Command had no Bradley 500-horsepower engines on hand and had back orders for 107 engines, including 53 for Operation Desert Storm. The Command estimated that it would need 50 engines a month to meet Operation Desert Storm requirements. On the basis of the Command's estimate of the number of engines it could expect to receive from repair facilities, it projected that demands could not be met until sometime in April 1991. [Ref. 13, pp. 39-40]

AVSCOM increased its repair capabilities for 1,200 depot repair programs and established 589 new programs. These initiatives (by both TACOM and AVSCOM), to satisfy the ODS requirements for fiscal year 1991, cost the Army an estimated $197 million. [Ref. 13, p. 33]

2. Sustainment Maintenance Personnel

Operation Desert Shield/Storm revealed another weakness in the Army's sustainment maintenance strategy. In peacetime, the majority of the general support (GS) maintenance is conducted by Directorate of Logistics (DOL) activities. These activities are predominately staffed by civilian employees rather than Army soldiers and are considered an installation organization. As a result, they do not deploy in support of conflicts. However, the Army's current sustainment maintenance strategy relies on military units to perform the necessary GS repairs. Additionally, a significant portion (about 86%) of the Army's deployable GS assets are from the National Guard (NG) and United States Army Reserve (USAR) rather than the AC.

The Army's strategy (as outlined in operational plans, training and doctrine publications, and maintenance policy regulations) to accomplish its critical sustainment maintenance mission calls for Army soldiers, both active and reserve, to perform it. However, these soldiers, whose mission is vital to sustaining the combat forces in a protracted conflict, are not sufficiently trained for their duties. This lack of training is particularly prevalent in the reserve component units because:

- Reserve units are sometimes located a great distance from maintenance sites or other repair facilities.
- The reserve soldiers only have about 39 days annually to meet all training requirements.
- Weekend training time is frequently spent on administrative tasks.
- Often, the effort is not put forth to integrate RC units with compatible active units to provide a quality two-week annual training period.
- Most RC units have earlier generation equipment/weapon systems than the equipment they are expected to maintain when activated.
- The NG/USAR units often lack the needed tools/equipment to repair the newer combat equipment fielded within the AC. [Ref. 14, pp. 2-4]

The lack of adequate training of soldiers in sustainment maintenance exists in the AC as well as the RC. Studies have shown that many active duty GS maintenance companies are not repairing the modern, higher priority systems, referred to as *force modernization equipment*, that populate today's battlefields. Investigators found that due to "insufficient training, experience, tools, and test equipment, they (GS maintenance units) were repairing older, lower priority equipment and, in some cases, were primarily

repairing obsolete and/or displaced equipment." Table 2-3 illustrates that for the Army's *force modernization equipment*, the majority of the repairs are being done by DOL personnel rather than soldiers. Several of the units were not even performing GS maintenance at all. Instead, they were performing direct support (DS) maintenance, which is a lower level of maintenance.

Equipment / Installation	FT Riley	FT Hood	FT Polk	PT Sill	FT Knox
SOLDIERS	*556th*	*190th*	*539th*	*225th*	*76th*
M1 Tanks	No	No	No	No	No
M2/3 Bradleys	No	No	No	No	No
HEMTT *	No	No	No	No	No
CIVILIANS	*DOL*	*DOL*	*DOL*	*DOL*	*DOL*
M1 Tanks	Yes	Yes	Yes	Yes	Yes
M2/3 Bradleys	Yes	Yes	Yes	Yes	Yes
HEMTT *	Yes	Yes	Yes	Yes	Yes

Table 2-3. Peacetime GS Maintenance Workloads [Ref. 15, pp. 15-20]

NOTES: All units identified are Heavy Equipment Maintenance Companies (HEMCO).
* Heavy Expanded Mobility Tactical Trucks (HEMTT).

During ODS, most of the GS maintenance companies that deployed were assigned tasks other than their designated mission. Only one of eight companies performed GS maintenance while deployed (see Table 2-4). Army officials stated that this was due to many of these units arriving in SWA later than expected and that they lacked the spare parts and tools required to perform GS maintenance. Had these units been performing the correct level of maintenance on the correct equipment in peacetime, they would have been better prepared to execute their wartime mission when needed.

GS Units	Assigned Tasks
76th HEMCO	Vehicle washing and cannibalization point
190th HEMCO	Cannibalization point and various details, such as mail delivery
647th LEMCO	Vehicle washing and other tasks, such as guard duty
556th HEMCO	Combat equipment turn-in site
170th HEMCO	Vehicle washing and preparing vehicles to return to the U. S.
344th HEMCO	Cannibalization point, technical inspections, and equipment recovery
900th HEMCO	Vehicle and component repair and retrograde *
238th HEMCO	Equipment turn-in site and backup DS maintenance

Table 2-4. GS Units' Primary Tasks During ODS [Ref. 14, pp. 5-6]

NOTES: Heavy Equipment Maintenance Company (HEMCO)
Light Equipment Maintenance Company (LEMCO)
* Assigned wartime mission

3. Maintenance Structure

One major shortcoming in the Army's sustainment maintenance structure is the lack of a single organization responsible for managing all of the various organizations/ units that are performing sustainment maintenance. The majority of the DOL activities and the active component GS maintenance companies are managed by Forces Command (FORSCOM). The remaining DOL activities are under the Training and Doctrine Command (TRADOC). The Army Materiel Command (AMC) controls all of the Army depots. Each of the reserve component elements (NG and USAR) have there own headquarters organization (see Figure 2-1). While this non-integrated structure has managed to provide adequate maintenance support during peacetime, it has failed miserably under wartime conditions. This problem surfaced early during ODS.

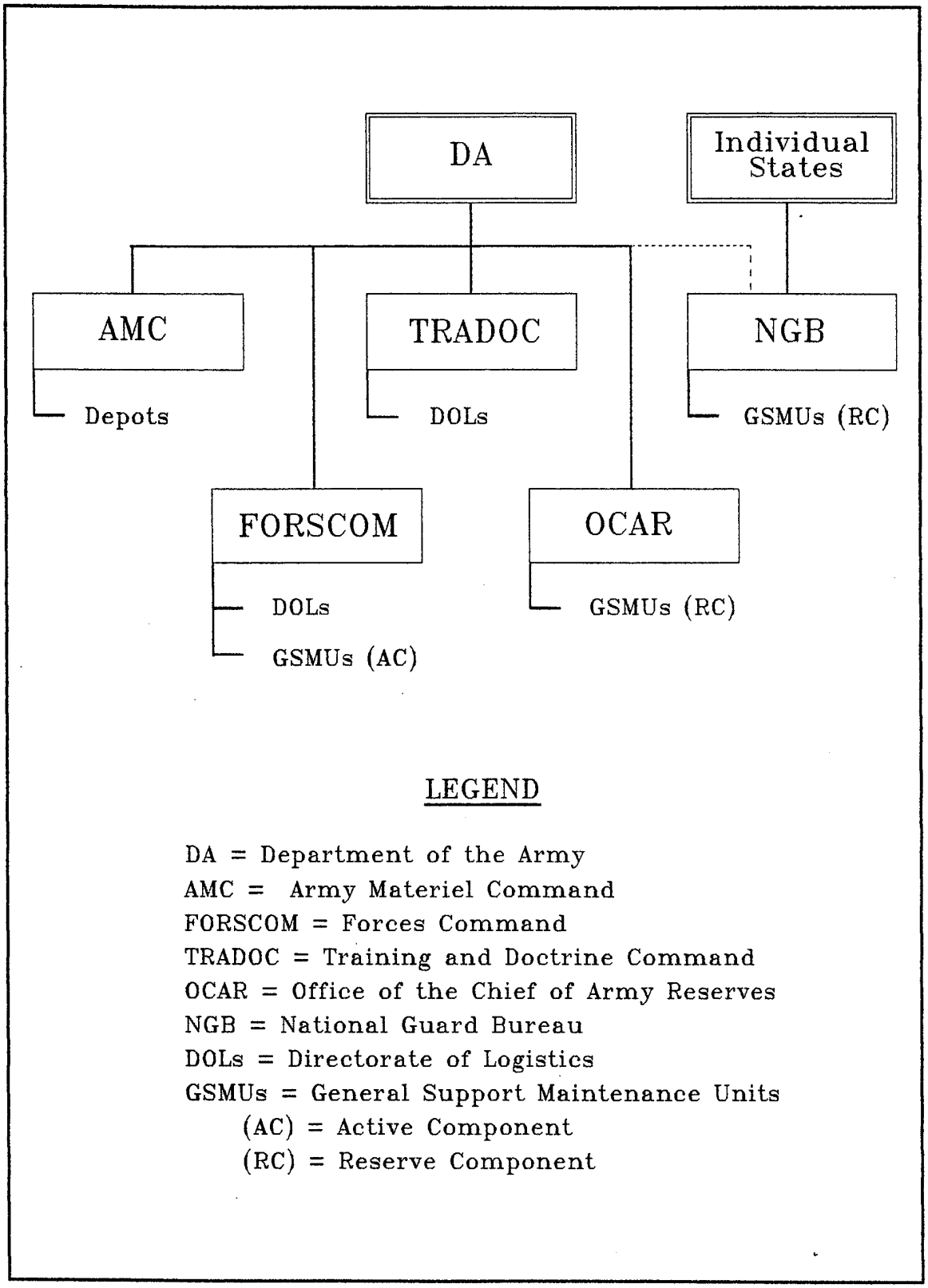

Figure 2-1. Sustainment Maintenance Organizations

The logistic planners within the U. S Central Command (CENTCOM), the command and control element in charge of ODS, were unable to coordinate their sustainment maintenance requirements with a single point of contact within the Army. Instead, CENTCOM personnel were forced to manage this critical support with the Army staff, several Major Army Commands (MACOMs), the National Guard Bureau, and the Office of the Chief, Army Reserve (OCAR). [Ref. 2, pp. 1-1 and 1-2]

One of the primary objectives of ISM is to reduce these problems associated with wartime readiness. First, under ISM, there will be exchanges/sharing of information and reparable items between the various activities that will be involved in the sustainment maintenance. The Centers of Excellence (COE) for the reparable programs will be redesignated every one to three years. This will allow the RC units to gain additional experience on the *force modernization equipment* and provide numerous maintenance activities capable of repairing these critical components. With this dispersion of experience, the sustainment maintenance system should be able to expand production in a time of crisis. Second, the ISM concept will provide planners and users of sustainment maintenance with a single point of contact (POC) within the Army. The single POC idea has not yet been solidified as to who (which agency) should fill the position and what their responsibilities/authority will be. Chapter III will discuss this issue. [Ref. 2, p. 1-6]

D. Budget Reductions

1. DOD Budget

Since 1988, (with the exception of fiscal year 1991 (FY91) due to ODS) the DoD budget has been shrinking as measured in both constant dollars and as a percentage of the

federal budget (see Figure 2-2). This type of reduction has traditionally cut a larger percentage of support (i. e., maintenance units) assets from the force structure than combat arms (i. e., infantry, armor, etc.) units. President Clinton's Budgetary Proposal for FY96 continues this downward trend. The proposed defense budget for FY96 is $258 billion. This amount is only two percent more than the FY95 budget of $253 billion. This five billion dollar "increase" will not even cover the inflation for next year. The Congressional Budget Office (CBO) estimates that the President's defense spending proposals will continue to decline through 1997; the proposed increases after that would approximately keep pace with inflation. [Ref. 16, p. 22]

2. Army Budget

The Army's budget, like the DoD budget, has experienced some harsh reductions as measured in both total obligational authority (TOA) and outlays. Figure 2-3 illustrates ten years of negative growth (excluding ODS) for the Army's TOA based on the percentage of real growth. A similar situation is shown in Figure 2-4 for the Army's outlays.

The Army budget is subdivided into categories (or appropriations). The five major appropriations are: military personnel (MILPERS), operations and maintenance (O&M), procurement, research and development (R&D), and military construction (MILCON). The need for a revised maintenance concept is even more obvious when one examines where, within the budget, the recent reductions have occurred (the O&M, excluding ODS, and the procurement appropriations).

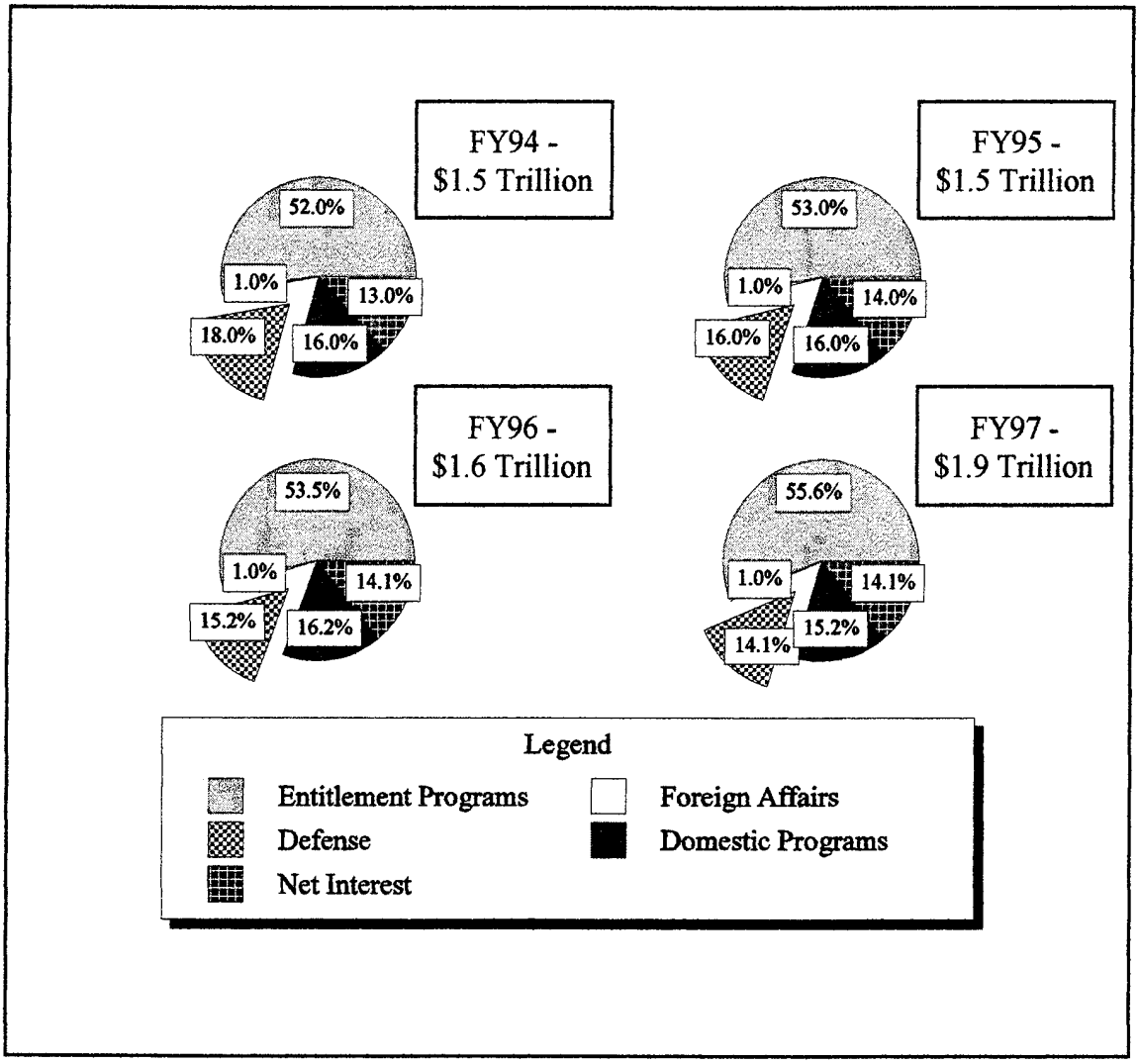

Figure 2-2. Defense as a Percent of Federal Budget (in Current Dollars) [Ref. 17]

The O&M appropriation is further subdivided into four other groupings called budget activities (BA). Table 2-5 provides a description of the types of projects funded within these budget activities.

The procurement appropriation is subdivided into five categories: aircraft, missiles, weapons and tracked combat vehicles, ammunition, and other procurements (i. e., tactical and support vehicles, communication and electronic equipment, and other

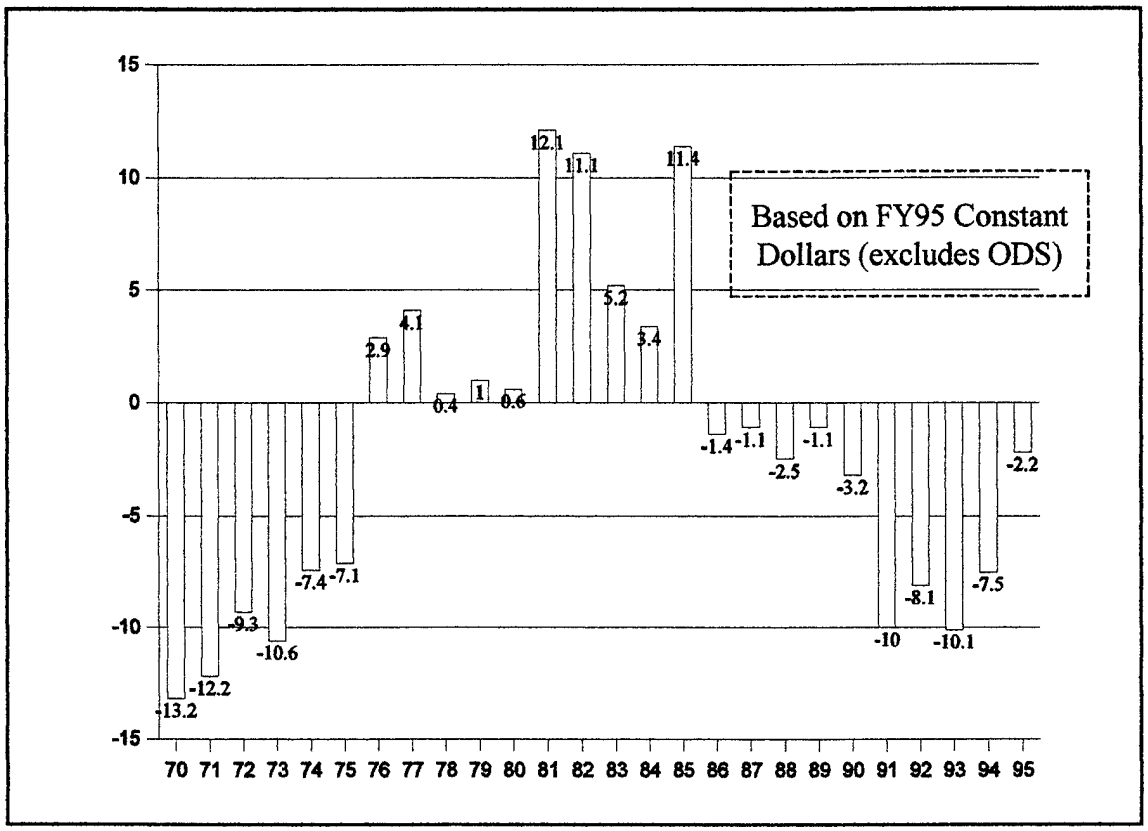

Figure 2-3. Army Real Growth Percentage (TOA FY70 - FY95) [Ref. 18, p. 2.]

support equipment). [Ref. 18, pp. 40-45] These procurement accounts have seen the most severe cuts of the five Army appropriations.

The FY95 procurement outlays was about one third of FY86 procurement outlays measured in constant dollars. The current buying power of the procurement appropriation equals the buying power of the "hollow force" of the mid-1970's. [Ref. 19, pp. 134-135] The proposed FY96 budget will continue this trend by eliminating $1 billion from the Army's previously planned procurement fund. [Ref. 16, p. 23] Coupled with the reduced acquisitions of more modern and dependable equipment, there have been drastic cuts in the O&M arena. Common sense indicates that if the Army's equipment is growing older and more exercised, additional O&M dollars should be

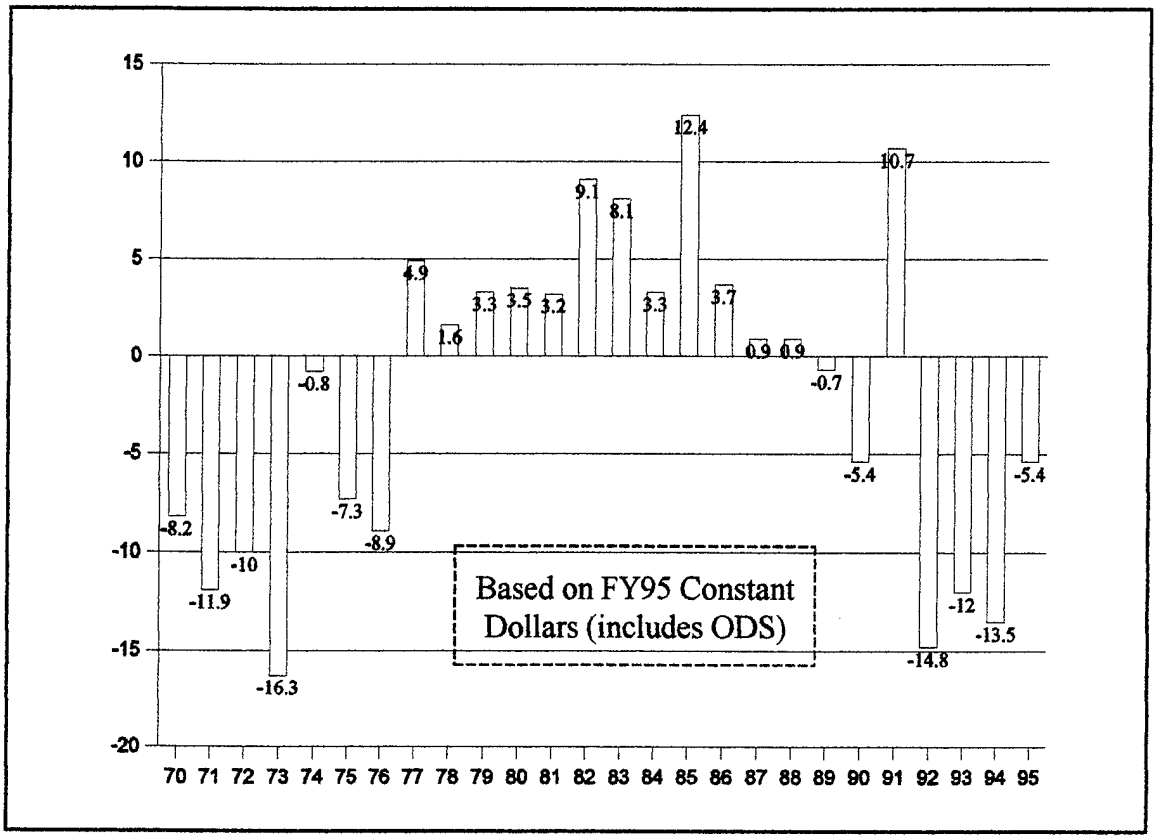

Figure 2-4. Army Real Growth Percentage (Outlays FY70 - FY95) [Ref. 19, pp. 134-135.]

Budget Activities (BA)	Description of Funding within the BA
BA 1 - Operating Forces	Finances the day-to-day operations of the minimum essential AC force. (i. e., combat units, tactical support, base support, and depot maintenance)
BA 2 - Mobilization	Supports strategic mobility requirements, prepositioned supplies and equipment, and the Army Reserves
BA 3 - Training & Recruiting	Finances institutional training and other selected training and training support activities.
BA 4 - Administration & Service-wide Activities	Funds administration, logistics, communications, and other Army-wide support functions to secure, equip, deploy, transport, sustain, and support forces worldwide.

Table 2-5. Budget Activities within the O&M Appropriation [Ref. 18, p. 32]

provided to at least maintain the current readiness posture. However, the opposite has occurred for the O&M appropriation since FY92. Figure 2-5 illustrates the relentless budget reductions that have occurred over the last decade.

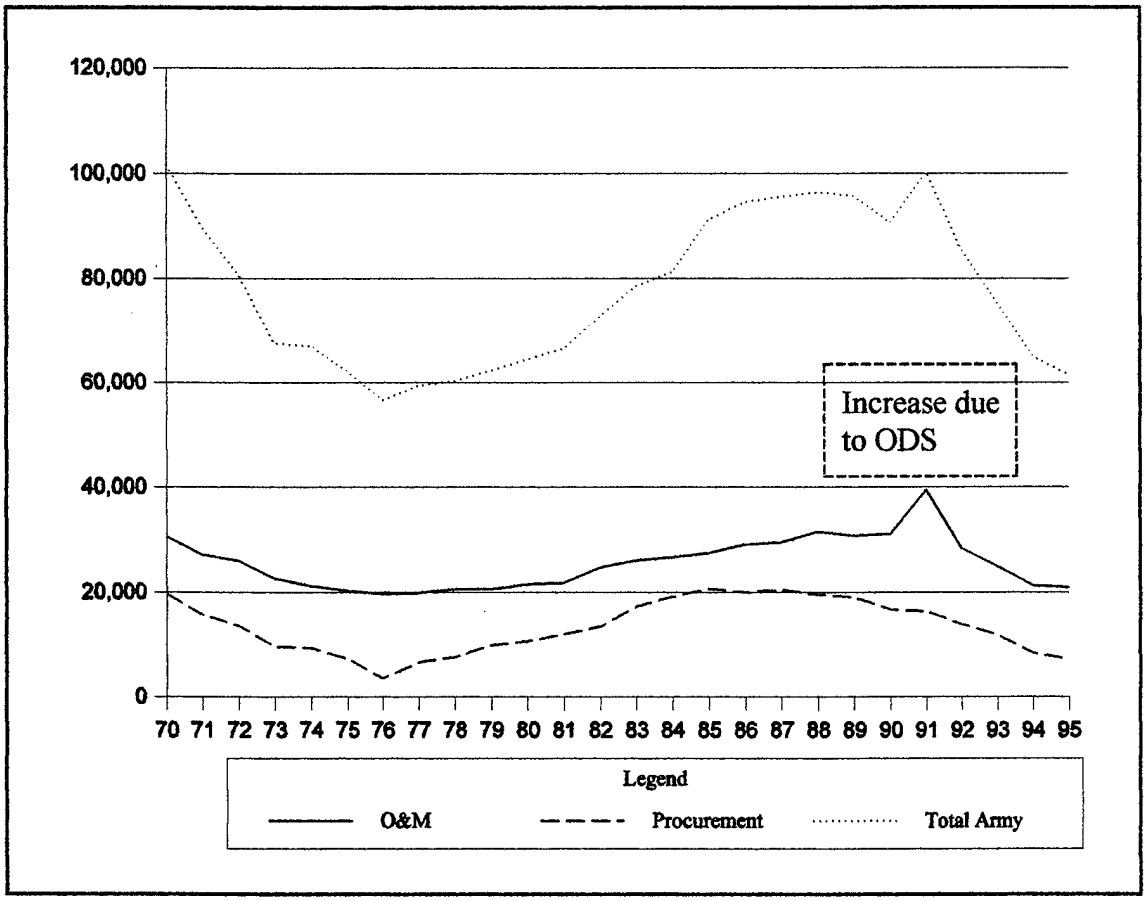

Figure 2-5. Army Outlays by Fiscal Year measured in FY95 Constant Dollars ($ in millions) [Ref. 19, pp. 134-135]

The Army desperately needs a sustainment maintenance system that will provide more support to its aging equipment with a proportionally smaller slice of the federal budget. ISM is a viable concept to satisfy this need.

E. CONCLUSION

This chapter has shown that due to the current environment in which the Army finds itself, concepts such as ISM can assist tremendously in providing a combat-ready military force suited to perform vastly different missions into the 21st century within a constraining budget. The next chapter will discuss the centralized management of ISM at the national level.

III. NATIONAL MANAGERIAL CONTROL OF ISM

Since the origin of the Integrated Sustainment Maintenance (ISM) concept, one of the most highly controversial and debated issues is who (what agency) should manage ISM at the national level. This chapter will outline the agencies that could serve as the National Sustainment Maintenance Manager (NSMM), the primary functions/ responsibilities of the NSMM, and the organizational structure of the NSMM office.

A. INTRODUCTION

From the beginning, one of the primary objectives of the ISM concept was to establish a single manager to centralize workloading and resource management responsibilities for the Army's sustainment maintenance. [Ref. 20, p. EX-2] As the ISM concept proceeds to be tested, the discussion about the function, structure, and management of the NSMM continues. Some ISM participants and stakeholders endorse a highly-centralized, hierarchial structure to serve as the NSMM; other parties favor no national organization at all.

Besides the fact that the original ISM "blueprint" called for a centralized manager for the Army's sustainment maintenance (SM), it appears justified to have some type of NSMM based on the complexity of the ISM theory. As Bolman and Deal explain, the complexity of an operation (such as ISM) can be attributed to the extremely complicated interactions among different individuals, groups, and organizations. [Ref. 21, p. 25] As Figure 2-1 illustrated, there are numerous agencies and types of organizations involved

with sustainment maintenance. By no means, however, does this identify all of the stakeholders affected by ISM. The ISM concept will, directly or indirectly, touch every unit and influence the management of nearly all of the equipment within the Army. The Strategic Logistics Agency (SLA) stated that

> this [ISM] is not business as usual. It represents a major change in sustaining maintenance policy and doctrine requiring major changes in the way the Army manages its maintenance operations. [Ref. 12, p. 9]

B. AGENCY SELECTION

1. Testing Phase

In addition to the complexity surrounding the NSMM debate, there has been a lack of consistency displayed during the ISM development and testing. During ISM Proof of Principle (PoP), the role of the NSMM was performed by representatives from the Depot Systems Command (DESCOM) [Ref. 20, p. W-2]. DESCOM, prior to its inactivation, was a major subordinate command (MSC) under the Army Materiel Command (AMC). Its primary mission was to manage the Army's depots and industrial base.

For the Integrated Sustainment Maintenance Expanded (ISM-X) demonstration, AMC was tasked with establishing "a management operations cell." [Ref. 2, p. 1-5] The cell was created by taking representatives from various MSCs within AMC (i. e., Missile Command (MICOM) and Tank automotive & Armaments Command (TACOM)). Although the concept by which the cell was created was prudent, the seven NSMM personnel were not assembled together at their Rock Island, Illinois, location until three

days before the start of the ISM-X demonstration. To further complicate matters, the newly formed NSMM cell fell under the control of the Industrial Operations Command (IOC), which replaced the DESCOM as the Army's depot manager. The new NSMM personnel have been challenged during the ISM-X because the majority of them were not involved with ISM prior to their temporary assignment as part of the NSMM staff. Additionally, the cell has had to define its own role as the demonstration occurs. The NSMM is further handicapped by the fact that there was only one region, based in Fort Hood, Texas, operational for the majority of the ISM-X.

2. Execution Phase

Due to sundry organizations/agencies (see Figure 2-1 and Table 3-1) involved with sustainment maintenance, it is no simple task to reach consensus on an issue as intricate as the organization and management of the NSMM. The two most likely major Army commands (MACOM) to assume responsibility for the NSMM, assuming there will be one, are AMC and Forces Command (FORSCOM). Just within these two applicants, there are numerous courses of action (COA) for the Army's senior leadership to consider.

The most obvious agency to perform the function of the NSMM is AMC. AMC's mission is "to develop, buy, and maintain material for the Army." Based on the widespread effects ISM will have on Army units, both individually and collectively, AMC is the logical candidate. After all, its motto is: "From helmets to helicopters, AMC

Major Subordinate Commands	*Separate Reporting Agencies*
Army Research Laboratory (ARL)	Army Materiel Command School of Engineering and Logistics
Aviation and Troop Command (ATCOM)	Army Materiel Command Europe
Chemical Biological Defense Command (CBDCOM)	Army Materiel Command Inspector General Activity
Communications Electronic Command (CECOM)	Army Materiel Command Installation & Services Activity
Industrial Operations Command (IOC)	Army Materiel Command Field Assistance in Science and Technology
Missile Command (MICOM)	Army Materiel Command Management Engineering Activity
Soldier Systems Command (SSCOM)	Army Materiel Command Logistic Support Activity
Simulation, Training, & Instrumentation Command (STRICOM)	International Cooperative Programs Activities
Tank automotive & Armaments Command (TACOM)	Intelligence and Technology Security Activity
Test and Evaluation Command (TECOM)	U. S. Army Research Office
United States Army Security Assistance Command (USASAC)	U. S. Army Science & Technology Center (Europe)
	U. S. Army Logistics Support Element
	U. S. Army Materiel System Analysis Activity

Table 3-1. AMC's Subordinate Agencies [Ref. 22]

supports every soldier in every unit every day." Furthermore, AMC is the best prepared agency within the Army to fill the role of the NSMM. The organization

> is big business. It manages inventory accounts worth more than ten billion dollars and ranks in business volume with the top ten corporations in the United States. It is comprised of more than 70,000 people, working at some 300 locations in more than 40 states and half a dozen foreign countries. [Ref. 22]

However, even if AMC were designated as the MACOM to fulfill the responsibilities as the NSMM, there remain several issues within AMC that need to be resolved. First, *who within the huge AMC organization will the NSMM work for?* The two options currently being considered are that the NSMM would be: (1) under control of the IOC or, (2) formed as a separate organization directly under AMC, similar to the separate reporting agencies (see Table 3-1). The advantage of option one is that the IOC owns the Army depots; however, it is believed that this type of organizational arrangement would create too much bureaucracy for the NSMM to function efficiently and facilitate timely maintenance repairs. Some personnel perceive this problem currently exists within the Army, and the fear is that ISM will fall victim to it if the NSMM works for the IOC.

Option two is promising because a separate organization may facilitate a broader-based coordination among the MSCs within AMC when required to resolve a problem. However, this alternative would require for a new agency to be formed, and this may be a difficult task considering the Army's force structure drawdown. There has also been a

proposal to combine these two options, in which the NSMM would be initially placed under the IOC but later be realigned to report directly to AMC [Ref. 23].

The second issue that AMC needs to resolve prior to assuming the NSMM job is *how much/what type of control does AMC have over the various activities performing the sustainment maintenance?* As Figure 2-1 showed, AMC only controls a small portion of these maintenance activities. The majority are owned by other MACOMs (FORSCOM, TRADOC, OCAR, and NGB). In preparation of being selected as the MACOM to oversee the NSMM, AMC has developed six COAs to help resolve this issue. Table 3-2 outlines the options by showing the ownership of the national, regional, and local sustainment maintenance managers (NSMM, RSMM, and LSMM). The COAs range from one extreme (AMC owning all sustainment maintenance activities) to another (a decentralized ISM structure with no NSMM). The likely outcome will be one (or a modification of one) of the middle COAs with memorandums of agreement (MOA) or memorandums of understanding (MOU) being signed by the five MACOMs currently involved with ISM. These MOAs/MOUs will be required to establish workloading prioritization schemes to ensure that essential installation requirements are accomplished despite the ISM workload. [Ref. 25, p. 11]

The only other MACOM that is even remotely being considered to assume responsibility for the NSMM is FORSCOM. The reason this option remains a possibility is due to the large percentage of sustainment maintenance activities (directorate of logistics (DOL) and active component general support maintenance units) under

	NSMM	RSMM	LSMM	Remarks
COA X	AMC	AMC	AMC	Original concept; AMC mgmt structure; AMC owns sustainment units
COA 1	AMC	AMC	MACOM-based	Full-up NSMM; AMC mgmt structure at NSMM and RSMM; assets remain with warfighters
COA 2	AMC	Corps-based	MACOM-based	Full-up NSMM; Corps assumes more control of regions
COA 3	AMC	Corps-based	MACOM-based	Inventory Control Points (ICP) and National Maintenance Points (NMP) provide national mgmt; each RSMM coordinates with each ICP
COA 4	AMC	Corps-based	MACOM-based	Limited NSMM (i. e., policy and QA standards); regions operate at their own direction
COA 5	None	Corps-based	MACOM-based	No national management

Table 3-2. ISM Courses of Action [Ref. 24]

FORSCOM ownership. Although there have been comments made regarding FORSCOM relinquishing control/ownership of their DOLs to AMC, it is highly unlikely such a transition will ever occur. The warfighting commanders at the installation level (i. e., the Commander of III Corps and Fort Hood, Texas) enjoy having the extensive repair capabilities of a DOL under their reign in order to help maintain equipment readiness. This attitude is somewhat justified when one considers that ISM is only a portion of the DOLs' designated mission. As of halfway through the ISM-X demonstration, the actual percentage of ISM jobs at each of the participating DOLs

varied based on the volume of ISM workorders and locally-generated requirements. At Fort Carson's DOL, about 52% of the workorders were ISM jobs [Ref. 26], while only approximately 25% of the jobs at the Fort Riley DOL belong to ISM [Ref. 27]. Aside form the issue of the ownership of the sustainment maintenance activities, FORSCOM offers little other advantages in being chosen as the headquarters responsible for the NSMM.

C. FUNCTIONS/RESPONSIBILITIES OF THE NSMM

Assuming that a NSMM will exist, the next issue that needs to be resolved is *what are the NSMM's functions/responsibilities*? Throughout the development and testing of ISM, the specified duties of the NSMM have grown. A "crawl, walk, run" approach has been applied to this issue.

1. Testing Phase

a. ISM PoP

During the PoP, the primary responsibilities assigned to the NSMM were:

- Assist with definition and execution of the PoP by attending meetings chaired by SLA.
- Serve as AMC's executive agent and provide a "single voice" on ISM issues/efforts.
- Develop/publish standard operating procedures (SOP)/directives to assist AMC in executing and assessing the PoP.
- Develop a NSMM command and control structure.

The NSMM focused on the following functions:

- Allocate annual reparable program.
- Provide/coordinate depot support to LSMM/RSMM.
- Coordinate utilization of national maintenance contracts.

Although the majority of these responsibilities/functions seem quite elementary, they were needed to establish the framework for the ISM concept. Keep in mind that the concept introduced a radically different way to perform sustainment maintenance, and the principle was still in its infancy during the PoP. [Ref. 20, pp. W-3 and W-4]

b. ISM-X Demonstration

As the participants became more familiar with the ISM concept, and as a quasi-permanent NSMM staff was formed, the responsibilities/functions grew, both in number and complexity. The main responsibilities given to the NSMM by AMC were:

- Consolidate/distribute sustainment maintenance (SM) requirements to optimize the utilization of SM resources.
- Develop/execute an AMC SM plan.
- Assist the Corporate Board in resolving inter-MACOM issues. (The Corporate Board consists of colonel-level or equivalent representatives from the five MACOMs. They meet quarterly, or as needed, to provide oversight of the demonstration. [Ref. 2, p. 3-7])
- Develop visibility of SM capacity and capabilities.

- Identify/evaluate SM costs and provide a centralized system to track the flow of funds, cost estimates, actual costs, and assets associated with executing national SM programs.

- Organize/schedule/manage the SM training requirements.

- Provide a customer service support program which monitors the customers' readiness needs and allows feedback from the customers.

- Develop/disseminate SM policies (Two of the draft policies produced by the NSMM are shown in the Appendix).

The functions of the NSMM during the ISM-X were divided within the *ISM-X Demonstration Plan* into three categories: demonstration, developmental, and long-term. These divisions were created for two reasons: (1) An attempt was made to shorten the learning curve for the new participants in the NSMM cell, and (2) due to the lack of baseline information and/or automated systems, the RAND Corportation could not evaluate all of the NSMM functions during the demonstration. The most critical and achievable functions were labelled as *demonstration functions* (DEMO), and were to be tested and measured during the demonstration. The *developmental functions* (DEV) were not scheduled to be tested; however, they were to be partially demonstrated and analyzed. Finally, the *long-term functions* (LT) were so dependent on automated systems or data that was not available, they were not be to demonstrated. The most significant functions are as follows:

- Identify/collect data to be used in SM management (requirements from the regions, the MSCs, and other customers; SM capacity and capability; and SM costs) (DEMO).

- Develop/execute/adjust national workload plan (DEMO).
- Prepare MOUs/MOAs among ISM-X participants and stakeholders as needed (DEMO).
- Resolve special maintenance problems to include readiness issues above the RSMM level (DEMO).
- Standardize data elements (DEV).
- Organize/schedule/manage SM training requirements and support to include providing wholesale assets down to the retail level for training (DEV).
- Provide support to the commanders of combined forces, Army forces, and war reserve equipment (DEV).
- Coordinate passback/backlog situations among ISM activities (DEV).
- Develop/submit input to Army Regulations and Field Manuals (DEV).
- Establish a cost comparability model (LT).
- Develop guidelines to balance production versus training requirements to maximize readiness (LT).
- Assist in the development of Integrated Logistics Support (ILS) plans to include: Level of Repair Analysis (LORA), Maintenance Allocation Charts (MAC), and Source Maintenance Recoverability (SMR) codes (LT).
- Develop long range SM plans and investment strategies (LT).
- Prepare to backfill a RSMM in the event of a deployment (LT).
- Identify opportunities for vertical and horizontal integration of management information systems (MIS) (LT). [Ref. 2, pp. 3-3 through 3-7]

2. Transitioning from Testing to Implementation

Once the NSMM personnel settled into their newly-formed positions, they started to modify their functions. These self-imposed changes resulted due to two factors. First, since one of the primary objectives of the ISM-X is to distinguish/clarify the role of the NSMM, the staff enhanced its apparent value-added to the ISM concept by defining its own purpose. Secondly, assuming a permanent NSMM would be activated as a part of the implementation of ISM, the NSMM staff developed an initial *Mission and Functions (M&F) Document*. The M&F outlines nine functions the NSMM will carry out:

- Develop/manage a data base of the SM activities' capabilities and capacities.
- Develop/manage a SM contractor data base.
- Integrate, to a greater extent, the Logistic Support Elements (LSE) into SM.
- Establish the automated requirements to support ISM.
- Develop the centralized SM plan from a total Army perspective.
- Manage the centralized tracking of SM data.
- Define an effective quality assurance program for SM.
- Support the development of ILS plans by making recommendations concerning LORAs, MACs, and SMRs.
- Improve customer service for SM participants through system interfaces and lines of communication. [Ref. 28, pp. 3-5]

Although the overall ISM concept is widely-supported by the personnel and agencies currently involved, many stakeholders have a great concern over the

responsibilities/functions of the NSMM. In particular, several item managers and maintenance personnel within TACOM are worried that the centralized SM plan and contractor data base will empower the NSMM to the point that the commodity commands/MSCs loose the flexibility to manage their items. [Ref. 29] The NSMM personnel have stated that this is not their intention. They see themselves, with the SM plan and contractor information, in a position to assist the item managers in making wiser decisions (make versus buy; repair versus washout; etc.) and saving money (through the consolidation of contracts). [Ref. 30]

From a human resource perspective, the TACOM personnel are justified in their concerns regarding their jobs/responsibilities. ISM will require change, and usually change is met with opposition. Bolman and Deal identify four issues concerning people's reaction to change. Change can

- Causes people to feel incompetent, needy, and powerless.
- Creates confusion and unpredictability throughout an organization.
- Generates conflict.
- Creates loss.

In order to minimize the resistance and the subsequent opposition, the concerned personnel should be involved with the development of sensitive issues (i. e., the structure, management, and responsibilities of the NSMM) and be educated as to the effects the personnel are likely to experience in their job. [Ref. 21, pp. 378, 381, and

397] It was shocking to see the lack of understanding of the ISM concept by some of the ISM participants.

D. ORGANIZATIONAL STRUCTURE OF THE NSMM

Although the functions/responsibilities of the NSMM are beginning to solidify, one major factor that will influence the NSMM's role and relationship to other agencies is the NSMM's structure. The NSMM, like any other organization or firm (public or private sector), needs to ensure that its structure is consistent and in agreement with the organization's goals/objectives/strategies. This is just as important as the need to have the firm's goals/objectives/strategies in congruence with the organization's external environment. [Ref. 31, p. 19-23] There have been several alternatives considered for both the NSMM staff and the overall ISM structure.

1. NSMM Staff Structure

There are two primary organizational structures being reviewed for the NSMM staff. Both consist of three functionally organized staff sections under the command of the NSMM. Each proposal has the various RSMMs also reporting directly to the NSMM. The main differences between the two options is the mission/responsibilities of the three staff elements.

Figure 3-1 illustrates the earlier of the two structures. Overall, this structure creates a broader range of functions/responsibilities for the NSMM organization, including a resource management section. The draft table of distribution and allowances (TDA) for this option consists of 44 personnel (see Table 3-3). [Ref. 7] The newer

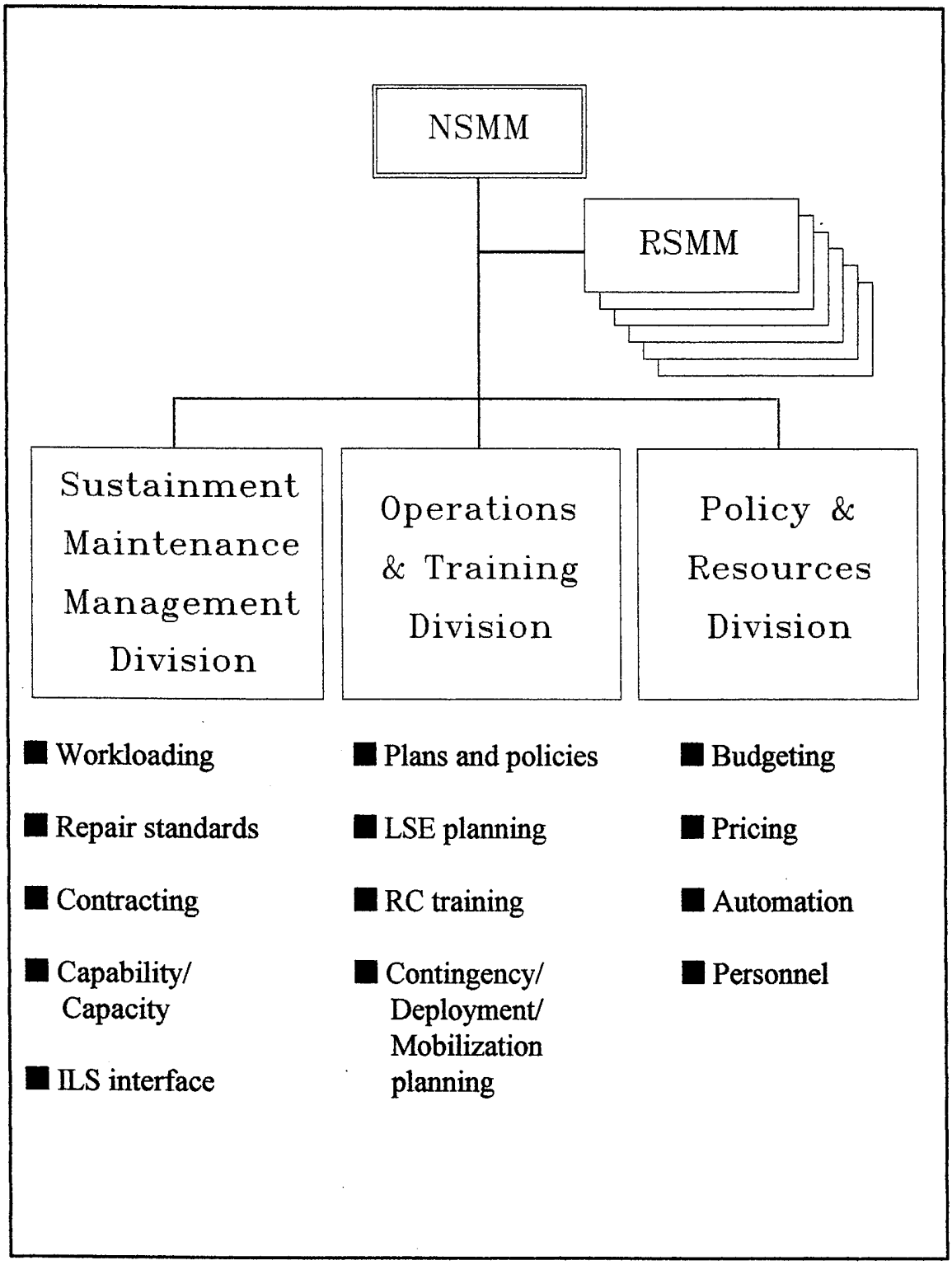

Figure 3-1. NSMM Organizational Structure - Option One

TITLE	GRADE	RQMT
NSMM DIRECTORATE		
Commander	O-6	1
Director	GS-15	1
Secretary	GS-6	1
Office Automation	GS-5	1
NATIONAL SUSTAINMENT MAINTENANCE MANAGEMENT DIVISION		
Chief	GS-14	1
Secretary	GS-5	1
Logistics Management Specialists	GS-13	3
Equipment Specialists	GS-12	3
Logistics Management Specialists	GS-11	3
Production Controller	GS-9	3
OPERATIONS AND TRAINING DIVISION		
Chief	GS-13	1
Secretary	GS-5	1
Logistics Management Specialists	GS-12	3
Equipment Specialists	GS-12	1
Plans Analyst	GS-12	1
Program Analyst	GS-11	1
Systems Analyst	GS-11	1
Logistics Management Specialists	GS-9	2
Maintenance Specialists	E-8	1
Supply Specialists	E-7	1

Table 3-3. NSMM TDA - Option One

TITLE	GRADE	RQMT
POLICY AND RESOURCES DIVISION		
Chief	GS-13	1
Secretary	GS-5	1
Supply Officer	W-5	1
Logistics Management Specialists	GS-12	2
Equipment Specialists	GS-12	1
Computer System Analyst	GS-12	2
Budget Analyst	GS-12	1
Process Analyst	GS-12	1
Logistics Management Specialists	GS-11	1
Logistics Management Specialists	GS-9	2

Table 3-3 (continued). NSMM TDA - Option One

option, shown in Figure 3-2, decentralizes the resource functions and introduces a customer service section. Table 3-4 depicts the 35 personnel TDA for this alternative. [Ref. 32]

2. Overall ISM Structure

As with nearly everything else thus far, the exact organizational structure of ISM remains undecided. The primary variables involved with the finalization of the structure are the number of RSMMs located in the continental United States (CONUS) and the number outside the continental United States (OCONUS). The two main factors influencing the number of RSMMs are the anticipated demand for ISM repaired items within a specific geographical area and the volume of sustainment maintenance

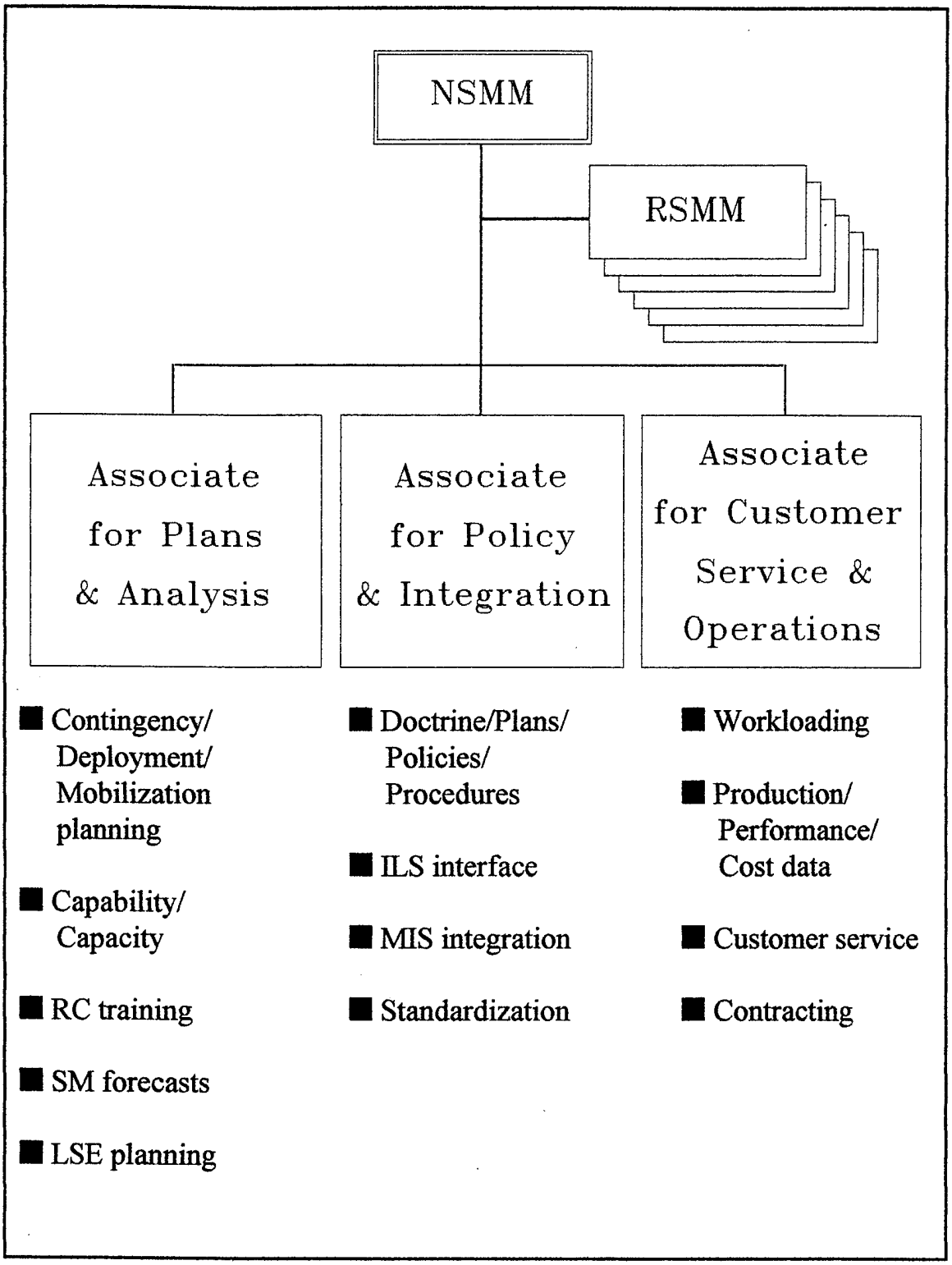

Figure 3-2. NSMM Organizational Structure - Option Two

TITLE	GRADE	RQMT
OFFICE OF THE DIRECTOR		
Director	O-6	1
Civilian Executive Assistant	GS-15	1
Administration Assistant	GS-6	2
Automation Specialist	GS-5	1
ASSOCIATE FOR PLANS AND ANALYSIS		
Chief	GS-13	1
Logistics Management Specialists	GS-12	1
Equipment Specialists	GS-12	1
Plans Analyst	GS-12	1
Budget Analyst	GS-12	1
Process Analyst	GS-12	1
Program Analyst	GS-11	1
ASSOCIATE FOR POLICY AND INTEGRATION		
Chief	GS-13	1
Logistics Management Specialists	GS-12	2
Equipment Specialists	GS-12	1
Systems Analyst	GS-12	1
Computer Systems Analyst	GS-11	2

Table 3-4. NSMM TDA - Option Two

TITLE	GRADE	RQMT
ASSOCIATE FOR CUSTOMER SERVICE AND OPERATIONS		
Chief	GS-14	1
Logistics Management Specialists	GS-13	4
Equipment Specialists	GS-12	3
Logistics Management Specialists	GS-11	3
Production Controller	GS-9	3
Logistics Management Specialists	GS-9	2

Table 3-4 (continued). NSMM TDA - Option Two

activities with a region. Considering there are between 75 - 100 such activities Army-wide, the RSMM issue is quite complex. Currently, AMC has not determined precisely how many LSMMs are needed to satisfy the Army's SM requirements. This issue is further complicated because the capabilities and capacities (C&C) of the various SM activities are not currently monitored by any agency within the Army. In the past, each MACOM was only concerned with its own C&C. This is further justification to implement ISM with a completely-staffed NSMM. Additionally, the reserve components (NGB and OCAR) have yet to commit to any specific level of participation in ISM.

Assuming ISM will be approved, there will be either two or three RSMMs in CONUS. If there are two regions, the U. S. will most likely be divided at the Mississippi River into an eastern region and a western region. Fort Bragg, North Carolina (XVIII Airborne Corps) would manage the eastern RSMM; the western RSMM would be assigned to Fort Hood, Texas (III Corps). This appears to be the Army's current plan for

CONUS RSMMs. If a third CONUS region were established, III Corps would have the central RSMM, while the western RSMM would be at Fort Lewis, Washington (I Corps). This option is not likely to occur because the Army has very few active component units west of Texas.

AMC is leaning towards three OCONUS regions, although having only two remains an option. If there were three OCONUS RSMMs, they would be located in Europe, Korea, and in the Pacific (either Hawaii, Alaska, or Japan). U. S. Army, Europe (USAREUR) would manage RSMM Europe; RSMM Far East would be assigned to the Eighth U. S. Army (EUSA) in Korea; and U. S. Army, Pacific (USARPAC) would oversee RSMM Pacific. [Ref. 32] If only two OCONUS regions were activated, it is assumed that RSMM Far East and RSMM Pacific would consolidate into one region.

E. CONCLUSION

Although the ISM concept of sustainment maintenance appears to be quite beneficial to the Army, the unanswered questions discussed in this chapter must be resolved in a timely and accurate manner in order to achieve the potential associated with the idea. The quality of the answers to these questions will either "make or break" the ISM concept. The subsequent chapter will highlight several of the external issues that ISM must face as it moves toward Army-wide implementation.

IV. SUMMARY

The preceding chapters have described the Integrated Sustainment Maintenance (ISM) concept, the need for implementation of the concept based on the current budget environment, and several of the major, unresolved issues. The current demonstration of the concept, ISM-Expanded (ISM-X), concludes on 31 December 1995. Although the future for ISM appears promising, the decision to execute the concept Army-wide rests with the Army's senior leadership.

A. IMPLEMENTATION DECISION

With nine months (April - December 1995) of data from the ISM-X demonstration added to the nine months (November 1993 - July 1994) of findings from the ISM Proof of Principle (PoP), the verdict moves to the jury. In this case, the jury consists of the commanders of the Army Materiel Command (AMC), the Training and Doctrine Command (TRADOC), and Forces Command (FORSCOM). These three generals, with their "12 Stars", will decide the fate of ISM. The "12 Stars" are scheduled to rule on ISM's future in January/February 1996. To assist these commanders with their ruling, the ISM Corporate Board will make a recommendation concerning whether or not to implement the concept, and if so, to what extent.

B. BARRIERS TO EXECUTION

Assuming the decision will be to implement ISM, there remain several hindrances to the successful execution of the concept. Some of these obstacles are

internal to ISM, while others exist within the Army. The following sections will highlight several of these barriers to execution.

1. Act of Implementation

Considering the relatively successful development/planning and testing phases of ISM, the next challenge will be implementation. Unfortunately, the complexity of the implementation phase is often underestimated or ignored. Digman states that the ultimate effectiveness of a decision is determined by its implementation. He says, "how the decision is put into practice is of critical, if not primary, importance." [Ref. 31, p. 19-2] Additionally, King and Cleland remarked that

> the greatest difficulties in instituting change do not lie in the design and development of the changes themselves. Rather, the greatest obstructions to positive change lie in the processes that are used to implement them. [Ref. 33, p. 325]

Hopefully, AMC (assuming they will be the major Army command (MACOM) responsible for ISM) will develop a competent implementation team (IT). AMC's original plan called for the IT to be formed simultaneously with the National Sustainment Maintenance Manager (NSMM) staff. After the completion of the implementation, the IT personnel would be absorbed into the NSMM staff. [Ref. 23]

2. Level of Participation

The ISM concept relies on the participation from various organizations throughout the Army. Without their involvement, the objectives of ISM will not be achieved.

a. AMC Commodity Commands

Several of the AMC major subordinate commands (MSC) shown in Table 3-1 also function as commodity commands. These commands (Aviation and Troop Command (ATCOM), Missile Command (MICOM), etc.) are responsible for managing specific categories of equipment for the Army. The ISM concept was developed to involve any type of equipment that could require sustainment maintenance. During the ISM PoP, a number of commodity commands were invited to participate [Ref. 20, pp. W-6 through W-10]. However, only the Tank automotive and Armaments Command (TACOM) chose to play. This trend has, for the most part, continued through ISM-X. NSMM and TACOM personnel are both concerned with the lack of involvement from the other commodity commands. Their concern is that ISM will be tailored too much toward TACOM, since TACOM has been so immersed with the testing of the concept. It is realized that this "isolationist philosophy" will not make Army-wide implementation of ISM any easier. [Ref. 7 and 34]

b. Reserve Components (RC)

As noted in the previous chapter, the level of participation of the Army Reserves and the National Guard has not yet been established. The matter is complicated due to the various headquarters involved with RC assets (see Figure 2-1). This uncertainty has effects both internal and external to ISM.

Internally, the level of RC commitment of their sustainment maintenance (SM) activities influences the number of regions needed within the United States to

successfully manage ISM. The issue also hinders the planning efforts being done to establish the appropriate amount of SM capability/capacity within ISM. External to ISM, the level of RC participation in ISM is a contributing factor to wartime readiness. After all, one of the lessons-learned from Operation Desert Shield/Storm (ODS) is that the RC lacked training on the Army's newer generation equipment/weapon systems. [Ref. 14, pp. 2-4]

3. Civilian versus Military

Due to the extreme competitiveness involved with the ISM concept, the majority of the SM repairs have been conducted by civilian labor (at the installation Directorate of Logistics (DOL)). For example, during the ISM PoP, the 190th Maintenance Company, a general support maintenance unit (GSMU), was marginally involved. However, when ISM-X began, the 190th was not included and did not contribute to the ISM workload. They were omitted because the soldiers (the "Green Suiters") were not as productive as their civilian counterparts in the Fort Hood DOL maintenance shop. [Ref. 6] There does not appear to be any feasible way to "even the score." The "Green Suiters" are handicapped by time-distractors (physical training, police calls/clean up details, formations/ceremonies, and other additional duties) as well as older, less sophisticated maintenance facilities/equipment in many instances.

Another advantage the civilian workers have over the soldiers is their job stability. While most civilian employees remain in an organization, like a DOL, for ten years or more, the military member is required to move every two - four years. This does

not include the, sometimes frequent, moves within an unit. Very often, a soldier is moved to various positions within the same unit to broaden his/her professional experience for future positions and promotions. Based on the higher turnover rate, a soldier will probably never acquire the same level of proficiency as a civilian worker.

An additional problem for the "Green Suiter" is the Army's personnel system. The Army believes that the same military occupational skill (MOS) categories, 63H (track-vehicle mechanic) and 63W (wheel-vehicle mechanic), can successfully perform at both the direct support (DS) level of maintenance as well as the general support (GS) level. As Table 1-1 illustrates, GS maintenance is more detailed than DS level. The soldiers in a DS maintenance shop are often thought of as "parts changers." However, these same soldiers could be reassigned to a GSMU where they are expected to know how to "repair" the same components they were only permitted to "change" before. Although there are very few opportunities for a 63H/W to be assigned to a GSMU, no one should anticipate that the soldier can match the efficiency of a civilian mechanic.

4. ISM Automation

The number one issue of concern for the managers at the local, regional, national, and commodity command levels is automation. Although the Executive Management Information System (EMIS) designed to support ISM is performing adequately (with several upgrades/modifications during the ISM PoP and ISM-X), the total automation environment is not satisfying the users. Many managers believe that the current systems being used within the Army's maintenance and supply arenas are not

integrated enough. One common criticism is the lack of asset visibility. Item managers at the commodity commands are forced to manually update their automated records via telephone conversations with the local sustainment maintenance managers (LSMM). To date, the item managers' system can not directly receive current maintenance status concerning their job-ordered equipment submitted at the SM activities. This shortcoming, though, does not exist between the item managers and the depots. These two parties are integrated via the depots' automation system. There appears to be resistance in modifying the depots' system, which is older technology, to accommodate ISM participants. From an efficiency standpoint, the ISM automation/management information system (MIS) needs serious review prior to Army-wide fielding of ISM. However, it must also be noted that most people are never totally satisfied with their automation capabilities. [Ref. 6, 7, 26, 27, 29, 30, 34, and 38, pp. 11-15]

5. Single Stock Fund (SSF)

Another Army initiative developed concurrently with ISM was the Single Stock Fund concept. Under this program, the Army would consolidate its current supply system, which includes two levels (wholesale and retail), into one fund. This idea has been discussed within the government for several years. The General Accounting Office (GAO) recommended the SSF in 1990 as a possible solution to the Army's excess inventory problem. The GAO reports that the Army needs a system to provide greater visibility of inventory assets and provide a means to redistribute excessive inventory. [Ref. 35, pp. 2-5]

In a subsequent report, GAO again suggested SSF as a partial solution to two other inventory-related issues. First, under the two levels of supply, there is a "disparity between the amount of credit given [for the returning of a serviceable or unserviceable part] to units by the retail stock fund and the amount of credit received from the wholesale stock fund." Secondly, the Army has been guilty of repairing components at the installation level, which is part of the retail system, that are in long supply (a high quantity of a specific item relative to its rate of usage) at the wholesale level. Both of these problems contribute to an inefficient use of the Army's scarce Operation and Maintenance (O&M) dollars. [Ref. 36, pp. 2-10]

Under the SSF concept, AMC would assume ownership of all secondary assets down to the installation level. Additionally, the two levels of stocks would be merged under a national item manager. The goals of SSF are to "reduce inventories, procurement investments, and costs of providing secondary items." The SSF has completed a PoP, like ISM, and has verified that potential savings and efficiencies can be achieved with the concept. However, the SSF concept is not as close to possible implementation as ISM. It appears that the SSF concept will be more expensive to introduce Army-wide then earlier anticipated. This funding issue, coupled with the shrinking DoD budget, has caused the SSF concept to be refined prior to Army-wide fielding. [Ref. 37, p. 15]

C. FUTURE RESEARCH

In addition to the various subjects presented in the previous section of this chapter, future research could examine the actual cost avoidance/saving of the ISM concept. After the completion of ISM-X, there should be a tremendous amount of data to facilitate additional research. It would be interesting to see if the initial benefits discovered with ISM continue as the concept matures. One observation mentioned in the ISM PoP after action report is that

> maintenance, supply, and transportation personnel [involved with the PoP] were instructed up front to prioritize anything with an ISM sticker on it. Standing Operating Procedures (SOPs) were established for ISM and installation procedures were basically idled. In essence, ISM was tested in a tailored environment, so the associated data collected during the PoP had to be skewed to some degree. To have real world results, you have to test the real world. Be aware of the 'Hawthorne Effect'. [Ref. 39, p. 9]

D. CONCLUSION

Even though the ISM concept still has some serious unresolved issues, it appears to be a maintenance system that can greatly benefit the Army and possibly other services within DoD. This author recommends that ISM be approved for Army-wide implementation in 1996, with a fully-staffed NSMM under the direct command and control of AMC.

APPENDIX. ISM POLICIES

This Appendix contains two draft policies prepared by the National Sustainment Maintenance Manager (NSMM) during the Integrated Sustainment Maintenance Expanded (ISM-X). The first policy outlines the procedures to be followed when non-repaired equipment must be passed from one source of repair (SOR) activity to another. The second policy describes the necessity of disposition instructions for items to be repaired under the ISM concept.

April 6, 1995
NSMM Policy 1-1

MAINTENANCE

Subject: General Support (GS) Passback

Policy:

1. Repair of GS passback will be accomplished in compliance with existing GS Technical Manual series 34, Aviation Intermediate Maintenance (AVIM) and/or Original Equipment Manufacturer (OEM) repair standards. Repairs requiring maintenance above the GS standards will be referred to the Major Subordinate Command (MSC) for disposition. When a Source Of Repair (SOR) has determined a passback situation exists, it is the responsibility of the SOR Local Sustainment Maintenance Manager (LSMM) to elevate the passback to the Regional Sustainment Maintenance Manager (RSMM). If the RSMM can not satisfy the passback requirement within the region, the RSMM is to elevate the requirement to the National Sustainment Maintenance Manager (NSMM). The NSMM will recommend the SOR to satisfy the passback requirement.

2. When passback requirements are performed within the region, the financial management processes shall be the same as inter-installation billing and reimbursement procedures used for Center of Excellence (COE) workloading.

3. When passback is between RSMM and NSMM, the Installation Resource Manager of that installation will provide a Military Interdepartmental Purchase Request (MIPR) to the NSMM. The NSMM will initiate action to provide a funded Procurement Work Directive (PWD) for the alternate SOR.

4. The MIPR/PWD will be the authorizing documents used to define precisely the quantity of items, the unit or program costs, projected time frames, level of repair, and property accountability procedures.

5. GS Passback repair will be subject to a 30 day warranty after the item has been put into service.

Figure A-1. Draft General Support Passback Policy for ISM

Discussion:

1. GS Passback is defined as that workload which is beyond SOR capacity, non-mission capable maintenance (NMCM), and forecasted backlog. The regions shall be offered a fair priced (commensurable with GS level repair standards) passback program to satisfy sustainment maintenance backlog generated at an echelon lower than depot maintenance. Items may have a maintenance repair code "D", for which the scope of work specifically requests a repair to GS standards. GS standards are normally identified in Technical Manuals, TM-34, AVIM and/or OEM. GS Passback is generated from the overflow of forecasted backlog and/or NMCM items impacting the readiness of a unit to perform its assigned mission. Backlog is one of many factors used by the Directorate of Logistics (DOLs), Combined Support Maintenance Shops (CSMSs), and General Support Units (GSUs) for forecasting annual budget and workload requirements.

Requirement: Integrated Sustainment Maintenance (ISM) directed

Proponents: AMSMC-PD (NSMM)

Original Signed

Dick Hawotte
National Sustainment Maintenance Manager

Figure A-1 (continued). Draft General Support Passback Policy for ISM [Ref. 7]

April 18, 1995
NSMM Policy 1-2

ADMINISTRATION

Subject: Disposition Policy

Policy:

Center of Excellence (COE) installations are not to be considered as storage activities. Transportation, shipping, and special instructions (i. e., short term staging) will be included in the Feasibility To Repair Request. Assets held over 30 days pending shipping instructions will incur staging and handling costs. Special programs (i. e., ship forward) requirements, procedures, duration, and cost will be included in scope of work (SOW). Changes in shipping instructions to meet customer requirements can be negotiated to include funding adjustments to the MIPR. SOW will also include instructions for disposal of residue of repair programs.

Discussion:

The objective of the Integrated Sustainment Maintenance Management program is to reduce maintenance costs. This objective is achieved by reducing actual repair cost, repair cycle times, and order and ship times. Many programs being worked at the COEs are repair and return programs. Early in the program, some SOWs were processed with shipping instructions as "to be determined." Failure to respond quickly to requests for shipping instructions has caused handling, staging, and storage problems at some local repair sites in the region. The purpose of this policy is to require disposition instructions or any special program requirements in the Feasibility To Repair Request, so all parties understand total program requirements and costs up front. The ability to move assets quickly after completion of repair is an integral part of the Integrated Sustainment Maintenance Management concept.

Requirement: Integrated Sustainment Maintenance (ISM) directed

Proponents: AMSMC-PD (NSMM)

Original Signed

Dick Hawotte
National Sustainment Maintenance Manager

Figure A-2. Draft Disposition Policy for ISM [Ref. 7]

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